

does not teach the different refractive index for the powder and the binder nor the relationship of the refractive indices claimed. The present Examiner relies on the disclosure at column 8, lines 13-23 of Brodtkin et al for the element that the refractive index of the powder material  $n_1$  and the refractive index of the binding agent  $n_2$  satisfy the relationship recited in claim 1. However, Brodtkin et al only describes the relationship between the refractive indices of barium borosilicate and organic monomeric matrix used in composite material, and does not disclose the relationship between the refractive indices of the powder material and the binding agent of the present invention. The composite material of Brodtkin et al seems to only relate to the powder material of the present invention.

Further, Brodtkin et al does not disclose the refractive index of the binder agent. Brodtkin et al discloses a step of applying a bonding material onto the ceramic composite layer (see, e.g., step (b) of claims 1, 15 and step (c) of claims 12 and 15). This is further described at column 4, lines 32-34, and characteristics of the binder material are discussed at column 5, lines 1-19. On the other hand, at column 7, lines 62-65, Brodtkin et al teaches that a particulate-filled composite comprises an inorganic filler dispersed in an organic polymerizable monomeric matrix. At column 8, lines 15-22, Brodtkin et al discloses that the filler may additionally contain a relatively small amount of a borosilicate glass which helps to narrow the gap between the refractive indices of the barium borosilicate (i.e., filler) and the organic monomeric matrix in which the filler is dispersed. See, e.g., column 7, lines 62-65. However, this does not relate to the binder material applied to the previously formed powder material layer as in the present invention. This appears to only relate to a difference in the refractive

indices between the filler, which is a component of the composite material of Brodtkin et al, and an additive for the filler.

In view of the above, since Brodtkin et al is silent as to the index of refraction as to the powder material and the binder agent, Brodtkin et al does not fairly disclose, teach or suggest the element that the refractive index of the powder material  $n_1$  and the refractive index of the binding agent  $n_2$  satisfy the relationship recited in claim 1. Therefore, Brodtkin et al does not anticipate or render obvious claim 1 and claims 4, 5, 7, 16, 17 and 20 which ultimately depend thereon.

Claim 2 also recites the element of the relationship between the refractive index of the powder material  $n_1$  and the refractive index of the binding agent  $n_2$ . Therefore, Brodtkin et al does not disclose, teach or suggest the invention of claim 2 and claims 6, 8-15 and 18, which depend directly or indirectly thereon for at least the same reasons discussed above.

With respect to claim 3, Brodtkin et al does not specifically disclose feeding a UV curable binder into the powder material layer previously formed as recited in claim 3. At column 5, lines 62-64, it is disclosed that the printed material used to bond successive layers can be curable, but does not specifically teach that the binder may be UV curable. The disclosure referred to by the Examiner at column 6, lines 52-55, merely describes additives that can be included in the polymer matrix of the composite material used for the powder material layer and not the binder. Therefore, for at least this reason, Brodtkin et al does not disclose all elements of claim 3 and therefore does not anticipate the claimed invention. Even further, since Brodtkin et al does not disclose a step of feeding a UV curable binder into the powder material layer previously formed, Brodtkin et al does not fairly disclose, teach or suggest curing

the binder upon radiation with UV rays and that after curing, a volatile component of the UV curable binder is not more than 5% by weight. This is one of the characteristic features of the invention as recited in claim 3. That is, . Brodkin et al also fails to disclose the element of "a volatile component of the UV curable binder after the curing with UV rays is not more than 5% by weight." As is clear from the description in column 6, lines 21-22 of Brodkin et al, the description in column 6, lines 52-87 of Brodkin et al that the Examiner relies on for the rejection only indicates a "polymer [polymeric] matrix" is contained in the composite material. Further, Brodkin et al describes "visible light curable" binder, but not describe UV curable binders. Thus, Brodkin et al does not anticipate the invention of claim 3 and that of claim 19, which is dependent thereon.

Additionally, the previous Examiner considered the disclosure of Brodkin et al and found claims 2, 3 and 6-15 to be free of the prior art. Further, the previous Examiner specifically stated that Brodkin et al does not teach the different refractive indices for the powder and the binder nor the relationship of the refractive indices as claimed. Thus, Applicants submit that full faith and credit should be given to the action of the previous Examiner unless there is a clear error in the previous action or knowledge of other prior art in accordance with MPEP 706.04.

### **III. Response to Claim Rejection under 35 U.S.C. § 103**

Claim 11 is rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Brodkin et al in view of Maitland.


Applicants respectfully traverse the rejection and submit that Brodtkin et al does not disclose the relationship of  $n_1$  and  $n_2$  as recited in claim 2, from which claim 11 depends for the reasons set forth above. Maitland does not remedy this deficiency and therefore the combination of references does not teach or suggest the claimed invention.

#### **IV. Conclusion**

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

  
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